

## Engaging Student Learning with Differentiation and Technology Tools

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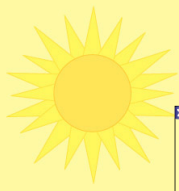



Informational website created for workshop:  
<http://www.nctm2010.wikispaces.com>

Feel free to contact me through the Wiki or email me.  
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### Keys to Differentiating instruction:

- Utilize color to illustrate different methods and steps
- Engage students through interactivity
- Apply real world/ relevant applications of math concepts
- Design lessons that have the ability to extend student thinking and remediate students' prerequisite skills



### What is a SMART Board?

Look software for teachers to design dynamic lessons which address specific student skills.

### Smartboard Uses:

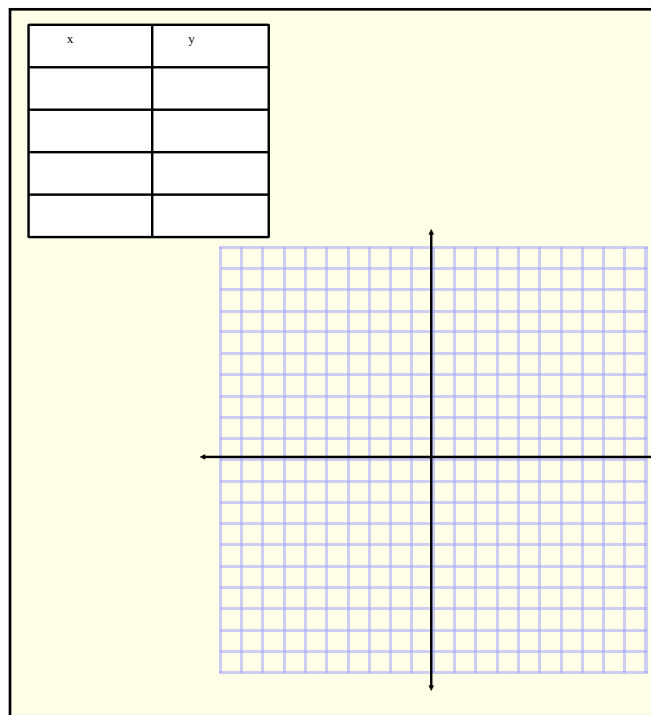
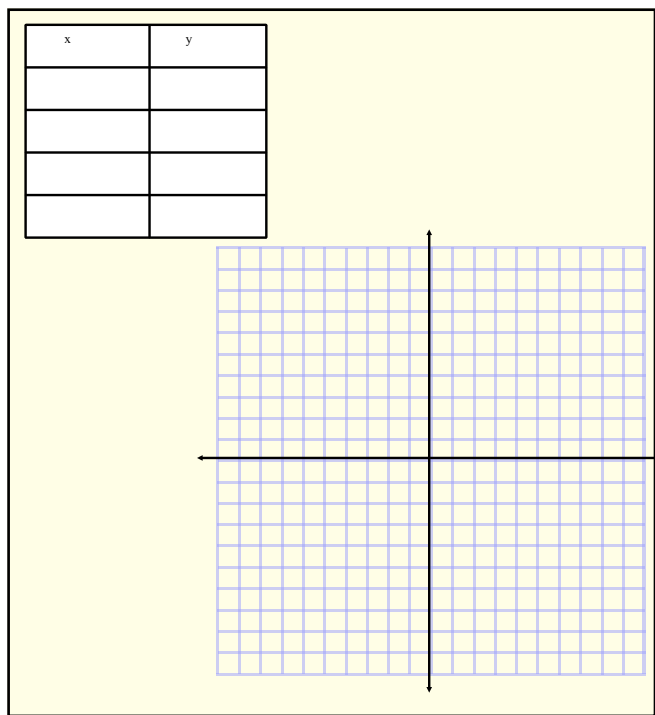
- Use for giving notes
- Use for reviews
- Use for interactive centers or stations
- Use for internet website interactions
- Use to show Microsoft Word/Excel
- Use to show powerpoint
- Use to link pages to websites
- Use for video clips, making movies, podcasts...
- INTERACTION IS THE KEY!





$$2x + 5 = 3(x - 1) - 2$$


$$3x - 2 = 4(x + 2) - 1$$

$$-5x + 2 = 2(x - 2) - 1$$







The Magic Pen (disappearing ink, spotlight)

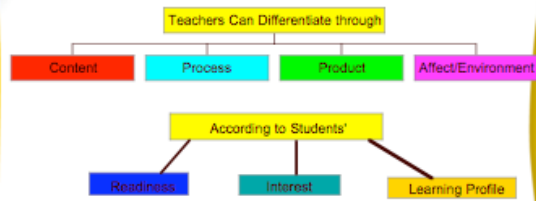


## Why Differentiate?



- ♦ All kids are different
- ♦ One size does not fit all
- ♦ Differentiation provides all students with access to all curriculum

## How can you Differentiate?



## Engaging all Students in Learning

- Learning is an active process-something students must do, not have done to them.
  - Does that mean I never use direct instruction?
- The average teenager has an interest span of less than 15 minutes.
  - Does that mean I should do something different every 15 minutes?
- You throw a piece of clay against the wall: it probably sticks. You throw information at a student; it probably does not stick.
  - How can you make it stick?



## Engaging all Students in Learning

- Continuously work on a classroom culture that invites student participation and thinking
- All student answers deserve respect
- Divergent thinking is important and should be "allowed"
- Not all questions have one correct answer

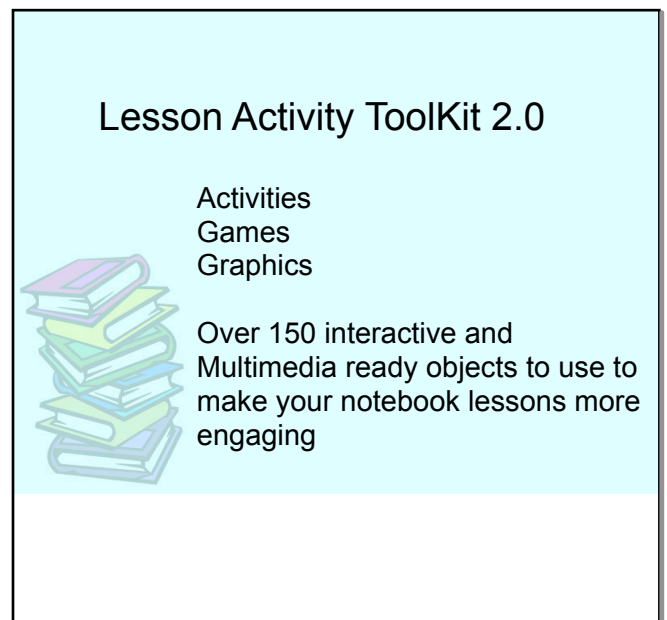
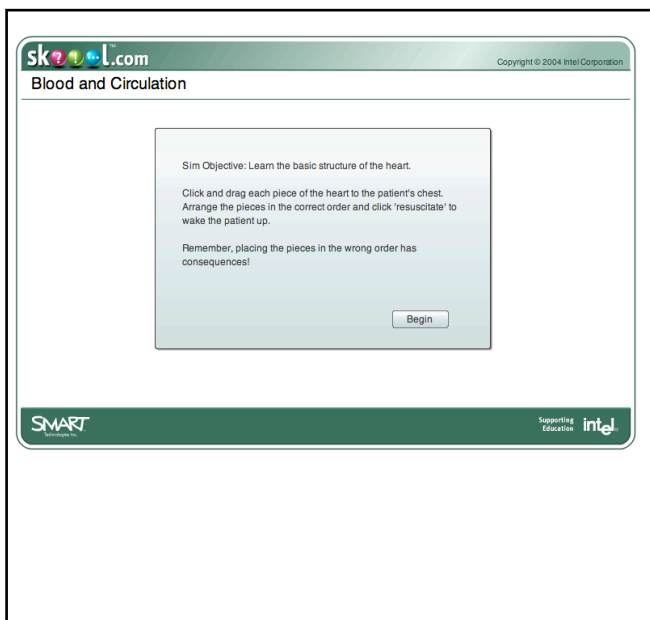
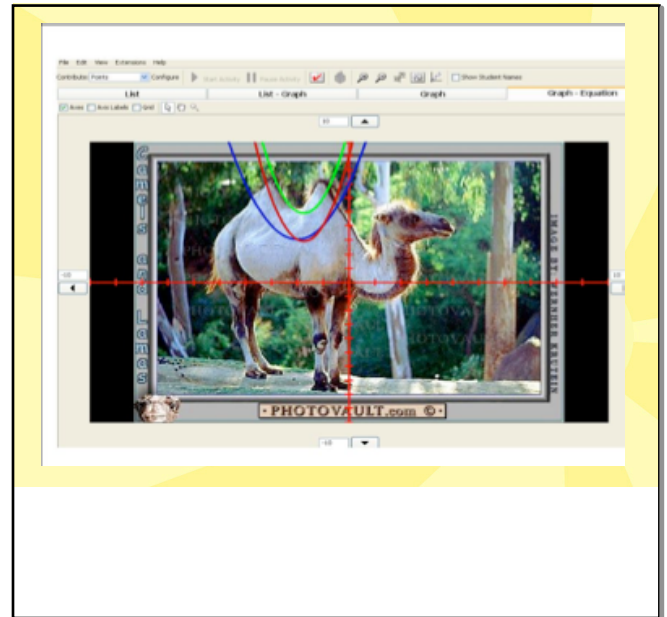
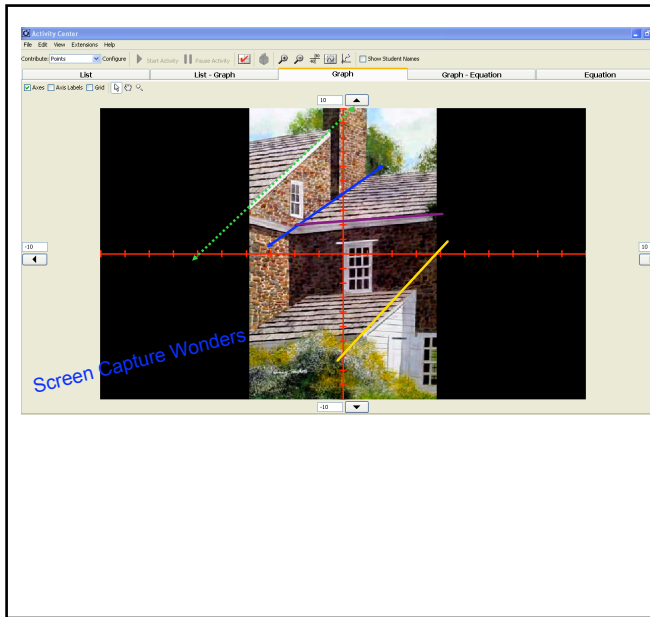


## Why use the TI Navigator?

- Formative Assessment, Summative Assessment, and Student Engagement

- Allow students to discover the meaning of parts of functions and more completely understand the transformations in a function.
  - Linear Examples
  - Quadratic Examples
- Collect data from students and have them analyze data individually as well as a class. (Numb3rs Activity)
  - Using student input data to solve open ended problems
- Navigator Activity Center - explore behavior of graphs and transformations
- Send assessments to students to collect formative data to shape instruction - can easily differentiate based on student need
  - Learn Checks and Quick Polls





Edit

Q.1

?

$$x - 9 = 12$$

A  $x = 21$

C  $x = -21$

B  $x = -3$

D  $x = 3$

Steps in solving an inequality

Edit

?

1

2

3

4

5

Edit

?

Word	Description
	a statement in which two expressions are equal
	an equation in the form of $ax=b$
	a number that when substituted makes the equation true
	mathematical statement containing numbers, operations
	a letter that is used to represent one or more numbers

solution

Linear equation

expression

equation

variable

Check

Solve

Reset

Edit

Check

Reset

Solve

?

$y = x^2 + 3$

$y = 1/3x$

$y = 2x - 3$

$y = |x| - 3$

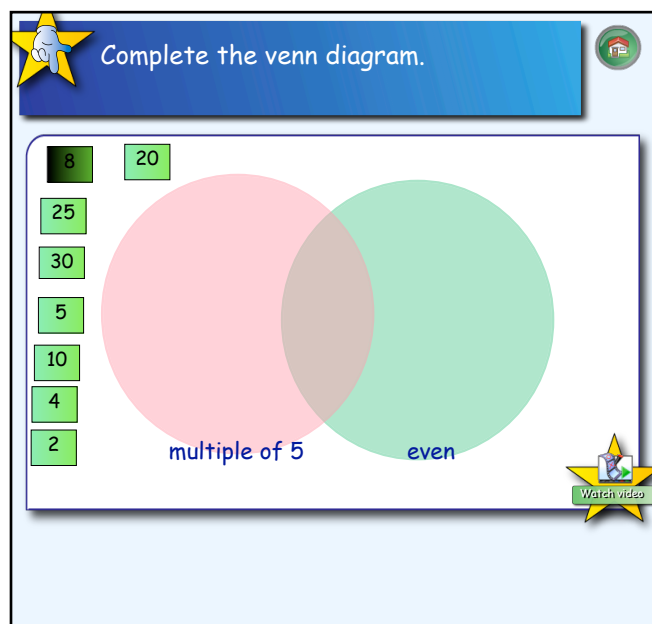
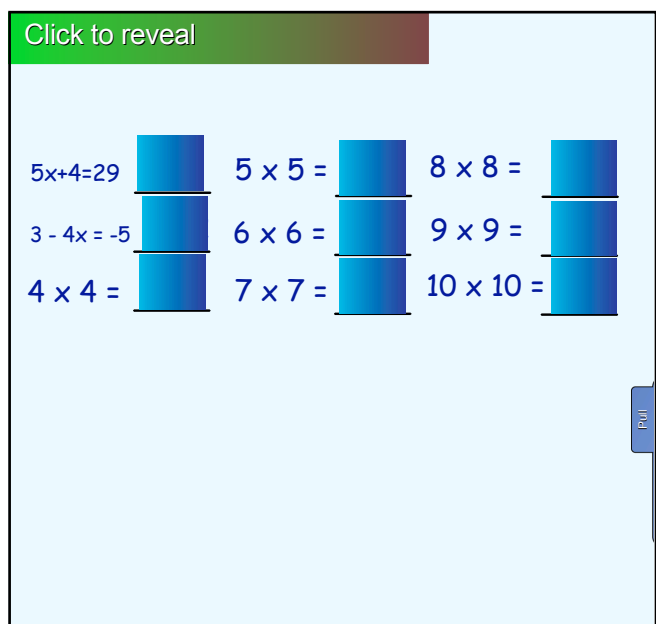
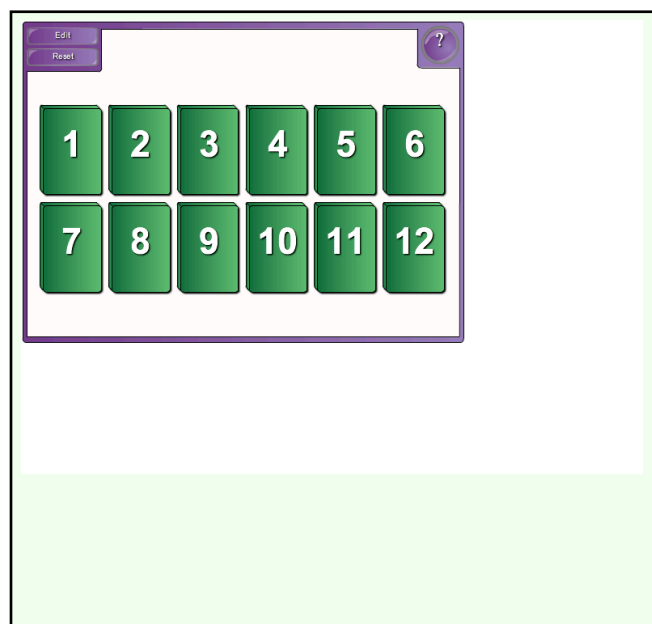
$y = -.5x + 2$

acute obtuse

Reorder the amount starting with the lowest value

To which family of functions does the pictured graph belong?  
Click on the flashing images to begin.

Arrange these shapes in order of their number of sides,  
from least to greatest





### Which of these words are verbs?

Press the balloons to pop them.

The image shows eight balloons arranged in two rows of four. Each balloon has a word written on it. The words are: Jump (blue), Apple (yellow), Car (yellow), Run (pink), Juggle (blue), Color (green), Meal (blue), and Spin (green).

### Label the diagram of the ear.

The diagram shows a cross-section of the human ear. Labels at the top point to the ear drum, cochlea, and ear canal. There are three text boxes with the placeholder 'Drag text here' for labeling other parts of the ear.

### Random Image Group Generator

The interface displays a grid of 24 random images of people. At the bottom, there are controls for the number of images (set to 24) and the number of groups (set to 6). Buttons for 'Generate', 'Reset', and 'Inject all groups' are also present.

The game interface features a 10x10 grid. In the center of the grid, there are two buttons: 'New game' and 'Resume game'. On the right side, there is an 'Options' button and a help icon (?).

It's great to share ideas and read tips from other educators - check out these SMART resources



## Teachers Love SMART Boards



### SMARTBoard Lessons Podcast

Digital ink leaves a mark in the mind.  
Go leave your mark!

[Interactive Websites](#)  
[PreMade Notebook Activity Downloads](#)  
[Resources](#)  
[Training and Tutorials](#)

Time to explore and find a useful ready made lesson that you could use in your classroom or lesson that could be adapted to your classroom

## Parting Thoughts

"That students differ may be inconvenient, but its inescapable. Adaptation to that diversity is the inevitable price of productivity, high standards, and fairness to students."  
- Ted Sizer

What can you say about the SMART Board Now?